

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,132,711 B2  
APPLICATION NO. : 10/028001  
DATED : November 7, 2006  
INVENTOR(S) : Forbes et al.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On Title Page, Item (73), in "Assignee", in column 1, line 1, after "Inc." insert  
-- , 83716 --.

On Title Page, Item (57), under "Abstract", in column 2, line 13, delete "metal-oxide"  
and insert -- metal oxide --, therefor.

On Title Page, Item (56), under "U.S. Patent Documents", in column 1, line 28, below  
"6,163,049 A 12/2000 Bui ..... 257/321" insert -- 6,169,306 1/2001  
Gardner et al. .... 257/310 --.

On Title Page, Item (56), under "Other Publications", in column 2, line 9, delete  
"Temperture" and insert -- Temperature --, therefor.

On Title Page, Item (56), under "Other Publications", in column 2, line 57, after  
"Dielectrics with" delete "Dielectrics with". (Second Occurrence)

On Title Page, Item (56), under "Other Publications", in column 1, line 2, delete  
"Internatonal" and insert -- International --, therefor.

On Title Page, Item (56), under "Other Publications", in column 1, line 9, delete  
"Symposium" and insert -- Symposium --, therefor.

On Title Page, Item (56), under "Other Publications", in column 1, line 9, delete "VSLP"  
and insert -- VLSI --, therefor.

On Title Page, Item (56), under "Other Publications", in column 1, line 12, delete  
"Physics" and insert -- Physica --, therefor.

On Title Page, Item (56), under "Other Publications", in column 1, line 33, delete  
"Similiar" and insert -- Similar --, therefor.

Title Page, Item (56), under "Other Publications", in column 2, line 7, delete "propeties"  
and insert -- properties --, therefor.

Title Page, Item (56), under "Other Publications", in column 2, line 50, delete "if" and  
insert -- of --, therefor.

On Sheet 1 of 17, in FIG. 1C, line 1, delete "VACCUUM" and insert -- VACUUM --,  
therefor.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 1, line 12, delete "Memory Metal Oxide Tunnel Insulators" and insert -- Floating Gate Memory, Low Tunnel Barrier Interpoly Insulators --, therefor.

In column 1, line 13, after "09/945,395," insert -- filed August 30, 2001, --.

In column 1, line 14, after "Insulator," delete ",".

In column 1, line 14, after "09/945,507," insert -- filed August 30, 2001, --.

In column 1, lines 15-16, delete "Dynamic Electrically Alterable Programmable Memory with Insulating Metal Oxide Interpoly Insulators" and insert -- Integrated Circuit Memory Device and Method --, therefor.

In column 1, line 16, delete ""Ser." and insert -- " Ser. --, therefor.

In column 1, line 17, after "09/945,498," insert -- filed August 30, 2001, --.

In column 1, line 17, delete "Field" and insert -- In Service --, therefor.

In column 1, line 18, delete "Metal Oxide and/or" before "Low Tunnel".

In column 1, line 19, after "09/945,512," insert -- filed August 30, 2001, --.

In column 1, line 20, delete "Metal Oxide Tunnel" and insert -- Low Tunnel Barrier --, therefor.

In column 1, line 21, after "09/945,554," insert -- filed August 30, 2001, --.

In column 1, line 22, delete "Devices" and insert -- Circuits --, therefor.

In column 1, line 23, after "Insulators," insert -- " --.

In column 1, line 23, after "09/945,500," insert -- filed August 30, 2001, --.

In column 1, line 55, delete "Nordhiem" and insert -- Nordheim --, therefor.

In column 2, lines 7-9, delete "FLASH MEMORY WITH MICROCRYSTALLINE SILICON CARBIDE AS THE FLOATING GATE STRUCTURE" and insert -- FLASH MEMORY WITH MICROCRYSTALLINE SILICON CARBIDE FILM FLOATING GATE --, therefor.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 2, lines 14–17, delete “DYNAMIC RANDOM ACCESS MEMORY OPERATION OF A FLASH MEMORY DEVICE WITH CHARGE STORAGE ON A LOW ELECTRON AFFINITY GaN OR GaAlN FLOATING GATE” and insert -- CURSOR CONTROLLING DEVICE AND THE METHOD OF THE SAME --, therefor.

In column 2, lines 18–21, delete “VARIABLE ELECTRON AFFINITY DIAMOND-LIKE COMPOUNDS FOR GATES IN SILICON CMOS MEMORIES AND IMAGING DEVICES” and insert -- TRANSISTOR WITH VARIABLE ELECTRON AFFINITY GATE AND METHODS OF FABRICATION AND USE --, therefor.

In column 2, lines 25–27, delete “DRAM CELLS WITH A STRUCTURE SURFACE USING A SELF STRUCTURED MASK” and insert -- METHOD FOR FORMING HIGH CAPACITANCE MEMORY CELLS --, therefor.

In column 2, lines 29–31, delete “ATOMIC LAYER EPITAXY GATE INSULATORS AND TEXTURED SURFACES FOR LOW VOLTAGE FLASH MEMORIES” and insert -- ALTERNATE METHOD AND STRUCTURE FOR IMPROVED FLOATING GATE TUNNELING DEVICES --, therefor.

In column 2, lines 36–38, delete “GATE INSULATOR FOR SILICON INTEGRATED CIRCUIT TECHNOLOGY BY THE CARBURIZATION OF SILICON” and insert -- CARBURIZED SILICON GATE INSULATORS FOR INTEGRATED CIRCUITS --, therefor.

In column 3, line 4, after “Francisco” delete “.” and insert -- , --, therefor.

In column 3, line 4, after “1984” delete “.” and insert -- ; --, therefor.

In column 3, line 7, after “Philadelphia” delete “.” and insert -- , --, therefor.

In column 3, line 10, after “Japan” delete “.” and insert -- , --, therefor.

In column 3, line 11, after “4,780,424” delete “.” and insert -- , --, therefor.

In column 3, line 14, after “Spectrum” delete “.” and insert -- , --, therefor.

In column 3, line 14, after “October” delete “.” and insert -- , --, therefor.

In column 3, line 18, after “5,801,401” delete “.” and insert -- , --, therefor.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 3, lines 18 – 19, delete “Flash Memory With Microcrystalline Silicon Carbide As The Floating Gate Structure” and insert -- Flash Memory With Microcrystalline Silicon Carbide Film Floating Gate --, therefor.

In column 3, line 20, after “5,852,306” delete “.” and insert -- , --, therefor.

In column 3, line 20, delete “MemorY” and insert -- Memory --, therefor.

In column 3, line 22, after “08/908,098” delete “.” and insert -- , --, therefor.

In column 3, lines 22–25, delete “Dynamic Random Access Memory Operation of a Flash Memory Device With Charge Storage On a Low Electron Affinity GaN or GaAlN Floating Gate” and insert -- Cursor Controlling Device and the Method of the Same --, therefor.

In column 3, line 26, after “08/903452” delete “.” and insert -- , --, therefor.

In column 3, lines 26–28, delete “Variable Electron Affinity Diamond-Like Compounds for Gates in Silicon CMOS Memories and Imaging Devices” and insert -- Transistor With Variable Electron Affinity Gate and Methods of Fabrication and Use --, therefor.

In column 3, lines 29–30, delete “Drain Cells With A Structure Surface Using A Self Structured Mask” and insert -- Method for Forming High Capacitance Memory Cells --, therefor.

In column 3, lines 31–33, delete “Atomic Layer Epitaxy Gate Insulators and Textured Surfaces for Low Voltage Flash Memories” and insert -- Alternate Method and Structure for Improved Floating Gate Tunneling Devices --, therefor.

In column 3, line 34, after “08/903,453” delete “.” and insert -- , --, therefor.

In column 3, lines 34–36, delete “Gate Insulator For Silicon Integrated Circuit Technology by the Carburization of Silicon” and insert -- Carburized Silicon Gate Insulators for Integrated Circuits --, therefor.

In column 3, line 37, after “09/945,514” delete “.” and insert -- , --, therefor.

In column 3, line 41, after “Insulator” delete “,” and insert -- ; --, therefor.

In column 3, line 42, after “09/780,169” delete “.” and insert -- , --, therefor

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 3, line 44, before "Tunneling" insert -- " --.

In column 3, line 45, delete "Al<sub>2</sub>O<sub>1</sub>" and insert -- Al<sub>2</sub>O<sub>3</sub> --, therefor.

In column 3, line 57, delete ""Thin" and insert -- " Thin --, therefor.

In column 3, line 59, after "Devices" delete "." and insert -- , --, therefor.

In column 3, line 60, after "Edition" delete "." and insert -- , --, therefor.

In column 3, line 63, after "Lett." insert -- , --.

In column 3, line 64, after "Feb." delete ",".

In column 3, line 65, after "Robertson" delete ".".

In column 3, line 67, delete "B." and insert -- B, --, therefor.

In column 4, line 3, after "Lett." insert -- , --.

In column 4, line 7, delete "B. Vol" and insert -- B, Vol. --, therefor.

In column 4, line 8, after "3" delete "." and insert -- , --, therefor.

In column 4, line 19, after "Phys." insert -- , --.

In column 4, line 20, after "Morris" delete "." and insert -- , --, therefor.

In column 4, line 22, after "AIME" delete "." and insert -- , --, therefor.

In column 4, line 25, after "Electronics" delete "." and insert -- , --, therefor.

In column 4, line 27, after "Soc." insert -- , --.

In column 4, line 32, delete "Band Gap" and insert -- Bandgap --, therefor.

In column 4 line 37, after "Luan" delete "." and insert -- , --, therefor.

In column 4, line 42, delete "Anal." and insert -- Appl. --, therefor.

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In column 4, line 43, after "Lett." insert -- , --.

In column 4, line 44, after "Guo" delete "." and insert -- , --, therefor.

In column 4, line 44, delete "Hub" and insert -- High --, therefor.

In column 4, lines 45-46, after "Technology'" delete "." and insert -- , --, therefor.

In column 4, line 50, after "Substrates" delete "." and insert -- , --, therefor.

In column 4, line 52, after "Yan" delete "." and insert -- , --, therefor.

In column 4, line 52, after "et al." insert -- , --.

In column 4, line 54, after "Ambient" insert -- , --.

In column 4, line 54, delete "voL" and insert -- vol. --, therefor.

In column 4, line 56, delete "Oi." and insert -- Qi, --, therefor.

In column 4, line 57, after "Si" delete "." and insert -- , --, therefor.

In column 4, line 58, after "IEDM" delete "." and insert -- , --, therefor.

In column 4, line 58, after "148" delete ":" and insert -- ; --, therefor.

In column 4, line 59, delete "Ms." and insert -- Ma, --, therefor.

In column 4, line 62, after "IEDM" delete "." and insert -- , --, therefor.

In column 4, line 64, delete "Brrriers" and insert -- Barriers --, therefor.

In column 4, line 66, after "Lett." insert -- , --.

In column 4, line 67, after "2001" delete ")".

In column 5, line 2, after "Oxide" delete "." and insert -- , --, therefor.

In column , line 3, after "Soc." insert -- , --.

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In column 5, line 5, delete "Gale" and insert -- Gate --, therefor.

In column 5, line 6, delete "Y<sub>2</sub>O<sub>2</sub>" and insert -- Y<sub>2</sub>O<sub>3</sub> --, therefor.

In column 5, line 6, after "Phys." insert -- , --.

In column 5, line 8, after "09/945,507" delete "." and insert -- , --, therefor.

In column 5, lines 8–9, delete "Flash Memory Devices With Metal Oxide Interpoly Insulators" and insert -- Flash Memory With Low Tunnel Barrier Interpoly Insulators --, therefor.

In column 5, line 17, after "1999" delete ")".

In column 5, line 18, delete "patent" and insert -- Patent --, therefor.

In column 5, line 18, after "09/651,380" delete "." and insert -- , --, therefor.

In column 5, line 20, after "09/945,507" delete "." and insert -- , --, therefor.

In column 5, lines 20–21, delete "Flash Memory Devices With Metal Oxide Interpoly Insulators" and insert -- Flash Memory With Low Tunnel Barrier Interpoly Insulators --, therefor.

In column 5, line 22, after "5,350,738" delete "." and insert -- , --, therefor.

In column 5, line 24, after "09/945,137" delete "." and insert -- , --, therefor.

In column 5, lines 24–25, delete "Low Cost Processes for Producing High Quality Perovskite Dielectric Films" and insert -- Methods of Forming Perovskite-Type Material and Capacitor Dielectric Having Perovskite-Type Crystalline Structure --, therefor.

In column 7, line 57, delete "nonvolatile" and insert -- non-volatile --, therefor.

In column 8, line 10, after "PbZrO<sub>3</sub>" insert -- . --.

In column 8, line 39, delete "6,135,175" and insert -- 6,134,175 --, therefor.

In column 8, line 41, after "transistors," insert -- " --.

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In column 9, line 25, delete "n+wafers" and insert -- n+ wafers --, therefor.

In column 13, line 22, delete " $E2 \Delta V2/t2$ " and insert --  $E2 = \Delta V2/t2$  --, therefor.

In column 13, line 40, delete " $V/23A$ " and insert --  $V/23\text{\AA}$  --, therefor.

In column 13, line 44, delete " $(\phi_0)721$ " and insert --  $(\phi_0) 721$  --, therefor.

In column 14, line 28, delete "(111)" and insert -- {111} --, therefor.

In column 14, line 57, delete "Angatroms" and insert -- Angstroms --, therefor.

In column 14, line 60, delete "10x" and insert -- 10X --, therefor.

In column 14, line 64, delete "Mast" and insert -- Most --, therefor.

In column 15, line 63, after "TABLE A" insert -- , --.

In column 16, line 66, after "bulk" insert -- , --.

In column 17, line 29, delete "TM(O)TM" and insert -- TM(O)/TM --, therefor.

In column 17, line 30, after "FIG." delete "2." and insert -- 9. --, therefor.

In column 17, line 45, delete "(ix)" and insert -- (vi) --, therefor.

In column 18, line 45, delete "FIG.s" and insert -- FIGS. --, therefor.

In column 18, lines 61–62, delete "105 to 107" and insert --  $10^5$  to  $10^7$  --, therefor.

In column 18, line 65, after " $\text{Al}_2\text{O}_3$ " delete " ,".

In column 19, line 15, delete " $\text{Al}_3$ " and insert --  $\text{Al}^{+3}$  --, therefor.

In column 19, line 39, delete "aluminium" and insert -- aluminum --, therefor.

In column 19, line 44, after "Angstroms" delete "." and insert -- , --, therefor.

In column 19, line 52, delete "Conning" and insert -- forming --, therefor.



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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 19, line 61, after "tunnel" delete " ,".

In column 20, line 17, delete "cV." and insert -- eV. --, therefor.

In column 20, line 30, delete "sonic" and insert -- some --, therefor.

In column 20, line 34, delete "Ta<sub>2</sub>O<sub>5</sub>" and insert -- Ta<sub>2</sub>O<sub>5</sub> --, therefor.

In column 20, line 43, before "FLASH" insert -- " --.

In column 20, lines 43-44, delete "FLASH MEMORY DEVICES WITH METAL OXIDE INTERPOLY INSULATORS" and insert -- FLASH MEMORY WITH LOW TUNNEL BARRIER INTERPOLY INSULATORS --, therefor.

In column 20, line 45, delete "091945,507" and insert -- 09/945,507 --, therefor.

In column 20, line 53, delete "if" and insert -- rf --, therefor.

In column 20, line 58, delete "angstroms" and insert -- Angstroms --, therefor.

In column 21, line 5, after "Capacitors" insert -- , --.

In column 21, line 24, delete "tool;" and insert -- tools --, therefor.

In column 21, line 35, after "5,000" delete "A" and insert -- Å --, therefor.

In column 21, line 37, after "having" delete "then" and insert -- their --, therefor.

In column 21, line 49, after "at high" insert -- temperature. --.

In column 22, line 29, before "low k" delete "oxide/a" and insert -- oxide/ a --, therefor.

In Column 22, line 29, before "high k" delete "oxide/a" and insert -- oxide/ a --, therefor.

In column 22, line 46, delete "platinum" and insert -- palladium --, therefor.

In column 22, line 63, delete "This" and insert -- TMs --, therefor.

In column 22, line 67, after "Y-Ba-Cu" delete "System" and insert -- system --, therefor.

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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 24, line 61, after "1114 insert -- , --.

In column 24, line 62, after "accessing" insert -- . --.

In column 24, line 64, after "WE\*" insert -- , --.

In column 26, line 15, delete "interplay" and insert -- interpolate --, therefor.

In column 26, line 66, in Claim 8, delete "gale" and insert -- gate --, therefor.

In column 27, line 55, in Claim 16, delete "funned" and insert -- formed --, therefor.

In column 27, line 58, in Claim 17, delete "souree" and insert -- source --, therefor.

In column 27, line 61, in Claim 17, delete "flouting" and insert -- floating --, therefor.

In column 28, line 11, in Claim 17, delete "funned" and insert -- formed --, therefor.

In column 28, line 25, in Claim 20, delete "SrTiO<sub>3</sub>" and insert -- SrTiO<sub>3</sub> --, therefor.

In column 28, line 63, in Claim 28, after "transistor" insert -- , --.

In column 29, line 7, in Claim 28, delete "gate." and insert -- gate to promote easier erase operations using electron tunneling from the floating gate to the control gate and to promote longer retention. --, therefor.

In column 29, line 23, in Claim 29, delete "rentention." and insert -- retention. --, therefor.

In column 29, line 40, in Claim 34, delete "Perovikite" and insert -- Perovskite --, therefor.

In column 30, line 38, in Claim 41, delete "operation" and insert -- operations --, therefor.

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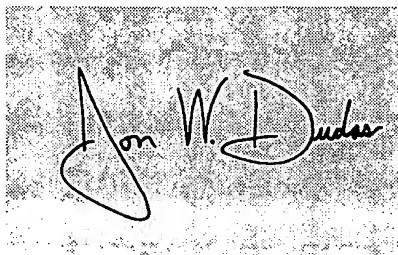
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It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

In column 30, line 45, in Claim 41, delete "layer" and insert -- layers --, therefor.

Signed and Sealed this

Thirteenth Day of February, 2007

A handwritten signature in black ink, reading "Jon W. Dudas", is centered within a rectangular box. The signature is written in a cursive style with a large initial "J".

JON W. DUDAS

*Director of the United States Patent and Trademark Office*